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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* STEPHEN V.R. HELLRIEGEL  
and ALEXANDER I. YATSKOV

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Appeal 2008-1181  
Application 10/012,210  
Technology Center 2800

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Decided: April 21, 2008

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Before EDWARD C. KIMLIN, THOMAS A. WALTZ, and  
ROMULO H. DELMENDO, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-21. Claim 1 is illustrative:

1. A device configured to electrically connect first and second circuit boards, comprising:

a flexible substrate;

a plurality of contact pads on a first surface of the substrate configured to make electrical contact with contact pads of the first circuit board; and

a strain relief structure, positioned between two of the plurality of contact pads.

The Examiner relies upon the following references in the rejection of the appealed claims:

Furnival	3,977,074	Aug. 31, 1976
Markovich	6,291,776 B1	Sep. 18, 2001

Appellants' claimed invention is directed to a device used to electrically connect first and second circuit boards, and the method for making the device. The device comprises a plurality of contact pads on a surface of a flexible substrate and a strain relief structure located between two of the contacts pads. The relief structure may be an aperture or a thin region of the flexible substrate.

Appealed claims 1, 2, 4, and 6-17 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Markovich. Claims 3 and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Markovich in view of Furnival.<sup>1</sup>

We have thoroughly reviewed each of Appellants' arguments for patentability. However, we find that the Examiner's rejections are well

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<sup>1</sup> As noted in Appellants' Reply Brief, the Examiner's Answer does not include the Final Rejection under 35 U.S.C. § 112, first paragraph, description requirement. Since the Examiner simply noted Appellants' Reply Brief, we will proceed on the basis that the Examiner has withdrawn the Final Rejection under § 112, first paragraph.

founded and supported by the prior art evidence relied upon. Accordingly, we will sustain the Examiner's rejections for essentially those reasons expressed in the Answer.

We consider first the Examiner's § 102 rejection of claims 1, 2, 4, and 6-17. We fully concur with the Examiner that Markovich describes the claimed device comprising a plurality of contact pads on a flexible substrate and a strain relief structure, an aperture, between the plurality of contact pads. Not only do the plated through-holes (PTH) of Markovich meet the structural requirement of the claimed strain relief structure but, as pointed out by the Examiner, the PTH of Markovich result in the reduction of stresses and strains (col. 3, first para.). As for the claimed **flexible** substrate, we agree with the Examiner that one of ordinary skill in the art would have gleaned that the organic laminate described by Markovich is flexible, at least to the unspecified degree claimed. Appellants' reliance on Furnival's preference for a rigid variety of a printed circuit substrate is of no avail. In as much as a preference for a rigid substrate is tantamount to teaching that a flexible substrate may also be used, we find that one of ordinary skill in the art would consider that the organic laminate of Markovich can be either flexible or rigid. Manifestly, a prior art disclosure of a term that includes only two embodiments is a fair description of both embodiments within the meaning of § 102.

Appellants maintain that "Markovich fails to teach any feature configured to make electrical contact with a circuit board" (Principal Br. 15, second para.). However, Markovich expressly teaches that chip carriers of

the type disclosed comprising organic laminates with PTH "provide for electrical interconnections between different printed circuit layers" (col. 1, ll. 12-13). Furthermore, it is not apparent how the recited intended use "configured to electrically connect first and second circuit boards" defines a structural feature that is not present in the laminate of Markovich. We perceive no meaningful distinction between devices (claim 1) and electrical connectors (claim 9) within the scope of the appealed claims and the organic laminates fairly described by Markovich which provide electrical interconnections between printed circuit layers.

We also do not subscribe to Appellants' reasoning that the PTH of Markovich are not strain relief structures since they are, assuredly, a source of strain and deformation (Principal Br. 17, second para.). Markovich, as stated above, specifically teaches that the PTH, when properly located, provide a reduction of stress and strains. Hence, any structural distinction between the claimed apertures and the apertures of Markovich escapes us. Also, we note that Markovich teaches that it was known in the art to use recesses and apertures to relieve stress in electrical connecting substrates (col. 1, l. 48 et seq.).

Concerning separately argued claim 4 which defines the relief structure as a thin region of the flexible substrate, we find that the apertures of Markovich's PTH is the ultimate thinned region of the substrate. Also, we agree with the Examiner that Figures 4b and 5b of the reference depict a thin region at the site of the aperture. The fact that the figures depict the

structure after reflow is of no consequence with respect to meeting the requirements of the claimed device.

We further agree with the Examiner that Markovich describes electrical traces that are capable of placing the contact pads in electrical contact with a second circuit board. In addition, we concur with the Examiner that Markovich describes an aperture of a PTH that electrically interrupts an electrical trace, as set forth in claim 8. It is of no moment, as argued by Appellants, that the PTH are electrically conductive insofar as all that is required is that the aperture interrupt the extension of the electrical trace.

Concerning the § 103 rejection of claim 3 and 5 which recite that the aperture has, in plan view, a rectangular shape, we agree with the Examiner that Furnival evidences the obviousness of using a rectangular shape for the apertures of Markovich. Moreover, it is well settled that where patentability is predicated upon a change in shape, configuration, concentration or the like, the burden is on the applicant to establish with objective evidence that the change is critical, i.e., it leads to a new, unexpected result. *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990); *In re Ranier*, 377 F.2d 1006, 1010 (CCPA 1967); *In re Bourden*, 240 F.2d 358, 361 (CCPA 1957); *In re Aller*, 220 F.2d 454, 456 (CCPA 1955). In the present case, Appellants have proffered no objective evidence which demonstrates that the particular shape of the aperture, being it rectangular or otherwise, produces unexpected results.

In conclusion, based on the foregoing and the reasons set forth by the Examiner, the Examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)(effective Sept. 13, 2004).

AFFIRMED

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